

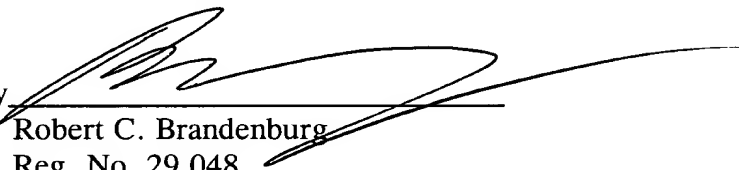
Remarks

The Applicants make this preliminary amendment in order to better define the invention. The Examiner is invited to telephone the undersigned if any §112 errors are noted so that this case may pass to issue.

Respectfully submitted,

David Eric Dutterer et al.

By


Robert C. Brandenburg
Reg. No. 29,048
Attorney for Applicants

Date: February 26, 2002

BROOKS & KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075
Phone: 248-358-4400
Fax: 248-358-3351

Attachment



VERSION WITH MARKINGS TO SHOW CHANGES MADE

In The Specification:

Please amend the paragraph beginning on page 1, at line 7 with the paragraph shown below:

Orbital palm sanders are widely used for a variety of sanding operations from woodworking to auto body repair. Orbital palm sanders come in two general types; random orbit sanders and pad sanders. Random orbit sanders typically have a round sanding platen which supports a sandpaper disc mounted on a central pivot bearing which is rotated about an orbital path. The sanding platen moves in an orbital pad but, is otherwise free to rotate about [the] a bearing. Pad sanders are typically very similar in construction to a palm-type random orbit sander, however, the sanding platen is constrained so that it can orbit, but cannot freely rotate relative to the housing. An example of such a tool is a quarter sheet sander having a generally square sanding platen. A third variant, although not common, is an eccentric sander where the sanding platen orbits at high speed about the motor axis while being slowly rotated by an eccentric gear pair.

Please amend the paragraph beginning on page 2, line 21 with the paragraph shown below:

Additionally, the preferred embodiment of the invention utilizes a novel eccentric drive and fan member where the fan is provided by an annular disc extending normal to the motor axis having a series of integrally formed blades circumaxially spaced about the disc in a non-uniform manner. The relative concentration of fan blades in one region of the discs and the sparse spacing of fan blades in a diametrically opposite region results in an imbalance which is used to counter-balance the eccentrically offset sanding platen which is pivotally attached thereto without using a conventional balance weight. **This prevents casting irregularities resulting in poor balance control.**

Please amend the paragraph beginning on page 4, line 13, through page 5, line 3, with the paragraph shown below:

Random orbit palm sander 10 shown in Figures 1 through 4 illustrates a preferred embodiment of the invention. The random orbit palm sander 10 is made up of an elongate tubular housing assembly 12 which is aligned along a generally vertical central axis 14. The housing has an upper first end 16, a central tubular region 18 and a open lower second end 20. Oriented within housing assembly 12 and generally aligned with central axis 14 is a high speed permanent magnet DC motor 22. The motor has a generally cylindrical body sized to fit within the housing tubular portion 12 and a rotary motor output shaft 24. Motor output shaft 24 is affixed to eccentric drive hub 26 which has an output member 28 which is eccentrically offset from the motor central axis. A sanding platen 30 is oriented adjacent to housing second end 20. This sanding platen 30 has a planar surface 32 which is

perpendicular to central axis 14 and is adapted to receive sandpaper. Interposed between the eccentric drive hub 26, drive member 28 and the sanding platen 30 is the bearing 34. Bearing 34 can be any one of a number of conventional design. In the embodiment illustrated, the bearing has an outer race which presses [into] onto drive member 28 and an inner race which cooperates with [a] fastening [bolt] bolts for removably mounting the sanding platen. Preferably, bearing 34 in a sealed high speed roller or ball bearing assembly.

Please amend the paragraph beginning on page 5, line 4 with the paragraph shown below:

Preferably, the eccentric drive hub 26 further includes a fan 36 for cooling the motor and for collecting dust. Fan 36 has a disc portion 38 and a plurality of lower fan blades 40 and upper fan blades 42. Rotation of the motor output shaft 24 causes fan 36 to rotate about central axis 14. The fan moves air radially outward from a region adjacent the motor axis to a zone outboard of the fan periphery. The fan additionally causes the air to swirl in a counter-clockwise direction (when viewed from the bottom in Figure 4) within the fan cavity 46 which is formed in the second end 20 of housing assembly 12. Lower fan blades 40 cause air to be drawn through ports 50 formed in sanding platen 30 in order to collect dust formed by the sanding process. Additionally, fan 40 tends to draw air through the annular opening formed between the sanding platen outer periphery and housing 20. However, this flow path is obstructed by annular seal/brake 52 which serves to [restrict the flow path and] provide a friction brake limiting the free spinning velocity of the sanding pad when the motor is energized without the sanding platen engaging a work piece.

Please amend the paragraph beginning on page 5, line 19 with the paragraph shown below:

The upper fan blades 42 on the upper surface of disc 38 serve to draw air generally axially through the central tubular region 18 of housing 12 in order to cool the motor. Air inlet ports 51 are located in the outer periphery of the housing first end 16 allowing air to enter the housing, flow around the motor and exit the housing fan cavity 44 via discharge port 46.

Please amend the paragraph beginning on page 6, line 5 with the paragraph shown below:

The entire fan 36 which is made up of upper fan blades [44] 42, lower fan blades 40 and disc 38 is formed with the eccentric drive hub 26 as an integral die cast unit. Preferably, the eccentric drive shaft fan unit is die cast zinc and most preferably formed ZMAK5™. The die cast fan is machined to receive the motor shaft 24 and bearing 34. The fan portion of the eccentric drive shaft unit is preferably not machined and is used as cast. In the present embodiment, no thick counterweight is used on the eccentric drive shaft hub fan unit; rather, the fan blades are non-uniformly distributed about the fan concentrating the fan

blades more closely spaced on one side than the diametrically opposite region. The weight caused by the increased concentration of fan blades creates a rotary imbalance which is designed to exactly offset the rotary imbalance caused by the offset location of the attached sanding platen 30. Since all of these sections of the cast fan are thin, porosity is not a problem. Therefore, the weight of the as-cast fan is very predictable eliminating the need for individual balancing of the fan resulting from weight variations caused by the porosity commonly occurring in the thick cross-section counterweight of the prior art.

In the Claims:

Please amend claim 19 as shown below:

19. (Amended) The orbital sander of claim 1 further comprising a power supply oriented within the housing, the power supply having an input adaptable to be coupled to a source of AC power, and a DC output electrically connected to the motor.

BEST AVAILABLE COPY